



**Third United Nations
International Conference
on the Peaceful Uses
of Atomic Energy**

A/CONF.28/A/478
GERMANY, FEDERAL
REPUBLIC OF
February 1964
Original: ENGLISH

Confidential until official release during Conference

Abstract

Prospecting for and Dressing of Uranium Ore in the
Federal Republic of Germany:
Progress in Methodology and New Results

by

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The technical improvement of radiometers in Germany has currently followed the general trend of measuring techniques. Thus, for example, the digital recording and processing of data gathered in airborne measurements is well advanced. Geochemical uranium prospecting with mobile laboratories has been improved to such an extent that a small field crew can carry through 1,500 soil and water analyses per month. The modern methods of mineralogy including X-ray and structure analysis have rendered predictable from surface outcrops the mineral associations at greater depths. Absolute age determinations on ores and rocks by various methods, together with gamma spectroscopy have proved to be an important auxiliary means for judging the genesis of deposits. Particularly successful was the prospecting in the southern part of the Black Forest, where a pitchblende-bearing deposit was discovered in red iron-baryte-quartz veins. In large parts of the deposit concentrations of greater than 1 % U were found. Owing to the extremely low present world market price of yellow cake, extensive research and technical development aimed at a lowering of production costs in the dressing of high-grade and low-grade ore. Relevant investigations using ores coming from 10 different deposits have been carried out in the dressing plant of Ellweiler. Only recently final tests were performed on a method which by a combination of ion exchange and liquid-liquid extractions permits recovery of nuclear pure solutions and uranates in the course of uranium-ore dressing.

Examples for the topics outlined are presented.